

**PATENT**  
Attorney Docket No. 29956

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3/8

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Application of:  
Varagur Chandrasekaran

Group Art Unit: 2661

Application No. 09/854,013

Examiner: CANGIALOSI, SALVATORE

Filed: May 10, 2001

For: L4 Lookup Implementation Using  
Efficient CAM Organization

**RECEIVED**

MAR 01 2002

Assistant Commissioner for Patents  
Washington, D.C. 20231

**Technology Center 2600**

**INFORMATION DISCLOSURE STATEMENT**

Pursuant to 37 C.F.R. §§ 1.97 and 1.98, the references listed on the enclosed Form PTO-1449 are submitted for consideration by the Examiner in the examination of the above-identified patent application. The full consideration of the references in their entirety by the Examiner is respectfully requested and encouraged. Also, it is respectfully requested that the references be entered into the record of the present application and that the Examiner place his or her initials in the appropriate area on the enclosed Form PTO-1449, thereby indicating the Examiner's consideration of each of the references.

A bona fide attempt is made to comply with §§ 1.97-98. The filing of this information disclosure statement should not be construed as a representation that a search has been made, nor is it to be construed to be an admission that the information cited in the statement is, or is considered to be, material to patentability as defined in § 1.56(b). Additionally, the submission of this IDS is for the purpose of providing a complete record and is not a concession that the references are prior art to the invention claimed in the patent application. The right is expressly reserved to establish an invention date earlier than the above-identified filing date in order to remove any reference submitted herewith as prior art should it be deemed appropriate to do so. Furthermore, the submission of the references is not to be taken as a concession that any reference represents art that is relevant or analogous to the claimed invention. Accordingly, the right to argue that any reference is not properly within the scope of prior art relevant to an examination of the claims in the above-identified application is also expressly reserved.

In re Varagur Chandrasekaran  
Serial No. 09/854,013

**The Information Disclosure Statement is being filed:**

- ☒ Under § 1.97(b): (1) within three months of the filing date of a national application other than a continued prosecution application under § 1.53(d); (2) within three months of the date of entry of the national stage as set forth in § 1.491 in an international application; (3) before the mailing of a first Office action on the merits; or (4) before the mailing of a first Office action after the filing of a request for continued examination under § 1.114.
- ☐ Under § 1.97(c): after (1), (2), or (3) above (i.e., after paragraph (b)) and before the mailing date of any of a final action under § 1.113, a notice of allowance under § 1.311, or an action that otherwise closes prosecution in the application, and is accompanied by:
- ☐ the statement specified in 37 C.F.R. § 1.97(e):
- ☐ Each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement; or
- ☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in § 1.56(c) more than three months prior to the filing of the information disclosure statement.
- ☐ the fee set forth in 37 C.F.R. § 1.17(p) (see "Fees" below).
- ☐ Under § 1.97(d): after the period specified in § 1.97(c) and before payment of the issue fee, and is accompanied by:
- ☐ the statement specified in 37 C.F.R. § 1.97(e):
- ☐ Each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement; or
- ☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in § 1.56(c) more than three months prior to the filing of the information disclosure statement.
- ☐ the fee set forth in 37 C.F.R. § 1.17(p) (see "Fees" below).

In re Varagur Chandrasekaran  
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### Copies Of The References

- ☒ Enclosed herewith are copies of the references listed on the enclosed Form PTO-1449. A concise explanation of the relevance, as it is presently understood by the individual designated in § 1.56(c) most knowledgeable about the content of the information, of each patent, publication, or other information listed that is not in the English language is included either separate from applicant's specification or incorporated therein. Furthermore, a copy of the translation of a non-English language reference is included herewith if a written English-language translation of a non-English-language document, or portion thereof, is within the possession, custody, or control of, or is readily available to any individual designated in § 1.56(c).
- ☐ A copy of a foreign search report is enclosed herewith.
- ☐ Per 37 C.F.R. § 1.98(d), copies of the references listed on the enclosed Form PTO-1449 are not provided as they were previously submitted to, or cited by, the Office in an earlier application, and (1) the earlier application is properly identified in the information disclosure statement and is relied on for an earlier effective filing date under 35 U.S.C. 120; and (2) the information disclosure statement submitted in the earlier application complies with paragraphs (a) through (c) of this 37 C.F.R. § 198. The details of the parent application(s) relied upon for an earlier filing date under 35 U.S.C. § 120 in which copies of the references were previously furnished are set out below:

U.S. APPLICATIONS		Status ( <i>check one</i> )		
U.S. APPLICATIONS	U.S. FILING DATE	PATENTED	PENDING	ABANDONED
1.				
2.				
3.				

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Serial No. 09/854,013

**Fees**

☒  
☐

No fee is owed by the applicant(s).

**The IDS Fee of \$180.00 is due.**

☐  
☐

Attached is check No. in the amount of \$180.

Charge Deposit Account No. 501430 in the amount of \$180.

**Authorization To Charge Additional Fees and Credit any Overpayment**

☒  
☐

If any additional fees are owed in connection with this communication, please charge  
Deposit Account No. 501430.

☒

Credit Account No. 501430 for any overpayment in connection with this communication.

Date: February 19, 2002

Respectfully submitted,

The Law Office of Kirk D. Williams

By



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303-282-0151  
303-778-0748 (facsimile)

FORM PTO-1449 MODIFIED		U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE		Application Number	09/854,013
<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>				Filing Date	May 10, 2001
				First Named Inventor	V. Chandrasekaran
				Group Art Unit	2661
				Examiner Name	Cangialosi, Salvatore
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U.S. PATENT DOCUMENTS				
EXAMINER'S INITIALS	Cite No.	Document Number	ISSUE or PUBL. DATE (MM-DD-YYYY)	Name of Patentee or Applicant of Cited Document
	AA	US - 3648254	03-07-1972	Beausoleil
	AB	US - 4296475	10-20-1981	Nederlof et al.
	AC	US - 4791606	12-13-1988	Threewitt et al.
	AD	US - 4996666	02-26-1991	Duluk, Jr.
	AE	US - 5383146	01-17-1995	Threewitt
	AF	US - 5440715	08-08-1995	Wyland
	AG	US - 5450351	09-12-1995	Heddes
	AH	US - 5841874	11-24-1998	Kempke et al.
	AI	US - 5978885	11-02-1999	Clark, II
	AJ	US - 6041389	03-21-2000	Rao
	AK	US - 6047369	04-04-2000	Colwell et al.
	AL	US - 6069573	05-30-2000	Clark, II et al.
	AM	US - 6081440	06-27-2000	Washburn et al.
	AN	US - 6134135	10-17-2000	Andersson
	AO	US - 6137707	10-24-2000	Srinivasan et al.
	AP	US - 6154384	11-28-2000	Nataraj et al.
	AQ	US - 6175513	01-16-2001	Khanna
	AR	US - 6199140	03-06-2001	Srinivasan et al.
	AS	US - 6240003	05-29-2001	McElroy
	AT	US - 6246601	06-12-2001	Pereira

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EXAMINER'S INITIALS	Cite No.	Document Number	ISSUE or PUBL. DATE (MM-DD-YYYY)	Name of Patentee or Applicant of Cited Document
	BA	US - 5088032	02-11-1992	Bosack
	BB	US - 5319763	06-07-1994	Ho et al.
	BC	US - 5481540	01-02-1996	Huang
	BD	US - 5515370	05-07-1996	Rau
	BE	US - 5740171	04-14-1998	Mazzola et al.
	BF	US - 5842040	11-24-1998	Hughes et al.
	BG	US - 5898689	04-27-1999	Kumar et al.
	BH	US - 5920886	07-06-1999	Feldmeier
	BI	US - 5930359	07-27-1999	Kempke et al.
	BJ	US - 5956336	09-21-1999	Loschke et al.
	BK	US - 6000008	12-07-1999	Simcoe
	BL	US - 6061368	05-09-2000	Hitzelberger
	BM	US - 6091725	07-18-2000	Cheriton et al.
	BN	US - 6097724	08-01-2000	Kartalopoulos
	BO	US - 6141738	10-31-2000	Munter et al.
	BP	US - 6148364	11-14-2000	Srinivasan et al.
	BQ	US - 6181698	01-30-2001	Hariguchi
	BR	US - 6236658	05-22-2001	Essbaum et al.
	BS	US - 6237061	05-22-2001	Srinivasan et al.
	BT	US - 6243667	06-05-2001	Kerr et al.
	BU	US - 6295576	09-25-2001	Ogura et al.
	BV	US - 6307855	10-23-2001	Hariguchi

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				Examiner Name	Cangialosi, Salvatore
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EXAMINER'S INITIALS	Cite No.	OTHER DOCUMENTS
	CA	DONALD R. MORRISON, "PATRICIA - Practical Algorithm to Retrieve Information Coded in Alphanumeric," Journal of the ACM, October 1968, pp. 514-534, Vol. 15, No. 4.
	CB	WALDVOGEL ET AL., "Scalable High Speed IP Routing Lookups," Proc. SIGCOMM '97, pp. 25-36, 1997, ACM.
	CC	JON P. WADE and CHARLES G. SODINI, "A Ternary Content Addressable Search Engine," IEEE Journal of Solid-State Circuits, Vol. 24, No. 4, August 1989, pp. 1003-1013.
	CD	TEUVO KOHONEN, CONTENT-ADDRESSABLE MEMORIES, 1987, pp. 128-129 and 142-144, Springer-Verlang, New York.
	CE	BRIAN DIPERT, ed., "Special-purpose SRAMs Smooth the Ride," EDN, June 24, 1999, pp. 93-104.
	CF	"Extending the LANCAM Comparand," Application Brief AB-N3, Rev. 1.0a Draft, Music Semiconductors, Milpitas, CA, September 30, 1998, 4 pages.
	CG	"Advantages of CAM in ASIC-Based Network Address Processing," Application Brief AB-N11, Rev. 1.2a Draft, Music Semiconductors, Milpitas, CA, September 30, 1998, 4 pages.
	CH	"Virtual Memory Applications of the MU9C1480A LANCAM," Application Note AN-N3, Rev. 1a, Music Semiconductors, Milpitas, CA, September 30, 1998, 12 pages.
	CI	"Using the MU9C1965A LANCAM MP for Data Wider than 128 Bits," Application Note AN-N19, Rev. 1a, Music Semiconductors, Milpitas, CA, September 30, 1998, 16 pages.
	CJ	"Fast IPv4 and IPv4 CIDR Address Translation and Filtering Using the MUAC Routing CoProcessor (RCP)," Application Note AN-N25, Rev. 0a, Music Semiconductors, Milpitas, CA, October 1, 1998, 16 pages.
	CK	"Using MUSIC Devices and RCPs for IP Flow Recognition," Application Note AN-N27, Rev. 0, Music Semiconductors, Milpitas, CA, October 21, 1998, 20 pages.
	CL	"Wide Ternary Searches Using Music CAMs and RCPs," Application Note AN-N31, Rev. 0, Music Semiconductors, Milpitas, CA, April 13, 1999, 8 pages.